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this experiment must be regarded as conclusive evidence that the plates have the chief rôle in coagulation.

Experiments made upon animals with nucleated red corpuscles, birds and amphibia, showed the presence of a pale nucleated blood plate, differing from the white corpuscles, and which has functions similar to those of the mammalian blood plate already described.—*W. H. Howell.*

DIGESTION OF MEATS AND MILK.—Jessen has carried out a series of experiments to determine the time necessary for the digestion of equal quantities of different meats and of milk. Three different methods were employed in the investigation: 1. Artificial digestion; 2. Introduction of the meats into the stomach of a living dog by means of a fistula; 3. Upon a healthy man, allowing him to swallow the foods used and ascertaining the time of digestion by means of the stomach pump. The results obtained by the different methods were, on the whole, uniform, as far as the relative time necessary for digestion in each case was concerned, and may be stated as follows: Raw beef and mutton were digested most quickly; for half-boiled beef and raw veal, a longer time is necessary; thoroughly boiled and half-roasted beef, raw pork and sour cow's milk followed next; fresh cow's milk, skimmed milk and goat's milk were still less easily digested; while the longest time was required for thoroughly roasted meats and boiled milk.—*Science.*

ANIMAL CHLOROPHYLL.—Th. W. Engelmann has investigated the function of the coloring matter of the green Vorticella, and comes to the conclusion that it possesess fully the physiological powers of vegetable chlorophyll, causing the evolution of oxygen under the influence of sunlight and probably serving the animal as an organ of assimilation. This view is contradictory to the belief of most of those who have investigated this subject, which is, that chlorophyll found in animal protoplasm is really of vegetable origin maintaining a more or less parasitic residence in it.

PSYCHOLOGY.

THE INTELLIGENCE OF THE AMERICAN TURRET SPIDER.—The Rev. H. C. McCook exhibited nests of *Tarentula arenicola* Scudder, a species of ground spiders of the family Lycosidæ, popularly known as the turret spider. These nests, in natural site, are surmounted by structures which quite closely resemble miniature old-fashioned chimneys, composed of mud and crossed sticks, as seen in the log cabins of pioneer settlers. From half an inch to one inch of the tube projects above ground, while it extends straight downwards twelve or more inches into the earth. The projecting portion or turret is in the form of a pentagon, more or less regular, and is built up of bits of grass, stalks of straw, small twigs, &c., laid across each other at the corners. The upper and projecting parts have a trimming of silk. Taking its position just inside the watch-tower, the spider leaps out and captures such insects as may come in its way. The speaker has found nests of the species at the base of the Allegheny mountains, near Altoona, and in New Jersey on the sea-shore. In the latter location the animal had availed itself of the building material at hand, by forming the foundation of its watch-tower of little quartz pebbles, sometimes producing a structure of considerable beauty. In this sandy site the tube is preserved intact by a delicate secretion of silk, to which the particles of sand adhere. This secretion scarcely presents the character of a net-lining, but has sufficient consistency to hold aloft a frail cylinder of sand and silk, when the sand is carefully scooped away from the site of the nest.

A nest recently obtained from Vineland, N. J., furnished an interesting illustration of the power of these araneids to intelligently adapt themselves to varying surroundings, and to take advantage of circumstances with which they certainly could not have been previously familiar. In order to preserve the nest, with a view to study the life-history of its occupant, the sod containing the tube had been carefully dug up and the upper and lower openings plugged with cotton. Upon the arrival of the nest in Philadelphia the plug guarding the entrance had been removed, but the other had been forgotten and allowed to remain. The spider, which still inhabited the tube, immediately began removing the cotton at the lower portion and cast some of it out. But, guided apparently by its sense of touch to the knowledge that the soft fibers of the cotton would be an excellent material with which to line its tube, it speedily began putting it to that use, and had soon spread a soft smooth layer over the inner surface and around the opening. The nest in this condition was exhibited, and showed the interior to be padded for about four inches from the summit of the tower. Dr. McCook pointed out the very manifest inference that the spider must, for the first time, have come in contact with such a material as cotton, and had immediately utilized its new experience by substituting the soft fiber for the ordinary silk lining, or rather adding it thereto.—*Proc. Acad. Nat. Sci. Philada., June 19, 1883, p. 131.*

NOTES ON A HAPPY FAMILY.—M. Manouvrier contributes to the Bull. Soc. Zool. de France, an account of the mutual relations of some animals that lived together in a restaurant, under good discipline. The companions were a large watch-dog, a male and female cat, two female hounds, two hares and a pair of pigeons. The last, accustomed to live without molestation, and gifted with too little intelligence to understand the situation, were the tyrants of the place, driving both cats and dogs away from the lighted portion of the floor. The poor cat, awoke from her pleasant sleep in the sun by the cooing and finally by the sundry pecks of the feeble bird on nose and feet, would often gently give up her place; but would sometimes move too slowly, and, teased beyond endurance, would occasionally bound upon it without hurting it. If the pigeon still continued its attacks, poor puss would discharge her nervous tension by giving four or five bounds into the air and then walk away. One of the hunting dogs, who was very young, would often watch the hares at their play, while the struggle going on in his brain between opposed inclinations was evidenced by a violent trembling of the body. The hares were always somewhat timid with the dogs and cats, yet would administer blows with their feet when the former played too roughly with them.

GALLANT CONDUCT OF A ROBIN.—On a fine Sunday morning in the month of May, my son with another young man were watching a sparrow, *Passer domesticus*, which was building or repairing its nest in a maple tree before the High school of Freehold, N. J. The young men sat on the steps of the school-building. They observed a sparrow-hawk, *Falco sparverius* L., hovering in mid-air. The Passer perched on the top of a picket but a few feet from them, when the hawk swooped down with great rapidity, seized and carried high in air the poor sparrow before the young men could fairly comprehend the transaction. It was, however, quite otherwise with a robin, *Turdus migratorius*, that had witnessed the deed from his perch in a tree near by. The noble bird lost no time in making pursuit of the marauder. My son says he never saw a robin fly with such speed as did this one. Soon it caught up with the hawk, which it fought desperately, literally pulling out the feathers by mouthfuls, which were easily seen floating in the air. The brave bird must have drawn blood, for every dip of its bill brought out a craven cry from the buccaneer. The robin achieved a complete victory, and the hawk, dropping his booty, made an ignominious retreat. The whilom prey fell a few feet through the air, probably half dead with fright, but regained its senses in time to recover the use of its wings before reaching the ground, when it flew away in a direction prudently the opposite of that taken by the hawk.

As to the conduct of the robin, it surely was magnanimous and courageous to a degree. The bird it rescued was at best an unfriendly pariah. These foreign sparrows, like some other intelligent citizens, as a friend remarked: "Are not overly loving to anything native born." I think the robin showed fine pluck. Had the hawk, on giving up his prey, turned upon his pursuer, the odds would have been fearfully against that brave bird. But the attack was so vigorous that the hawk was completely cowed, and glad to get away by flight. Whether the traditional killer of "cock-robin" experienced the emotion of gratitude to his deliverer is a bit of bird psychology that we cannot get at.—*Samuel Lockwood.*